

## **REMARKS**

Reconsideration of this application in light of the present amendment and remarks is respectfully requested.

Claims 1-13 have been rejected.

Claims 1 and 13 were objected to, due to formalities, which have been corrected in accordance with the Examiner's directions.

Claims 1, 8 and 13 have been amended.

Claims 1-13 are pending in this application.

The drawings were objected to as the description of the drawings referred to conventional transceivers. Figures 3-6 have be labeled as prior art in accordance with the Examiner's directions. Replacement sheets are enclosed.

The abstract has been amended to be shorter and to eliminate offending terms, in accordance with the Examiner's request.

Claims 1-13 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 13 have been amended to remove the offending "both" term and for further clarification that the encoding includes forward error correction of channel symbols and selection from redundant channel symbols those channel symbols producing the lower power variation in the combined signal.

Claim 8 was amended to remove and clarify the "determination" term objected to by the Examiner.

Claims 1-13 have been rejected under 35 U.S.C. §102(e) as being unpatentable over Kotzin et al. (US 5894498). This rejection is respectfully traversed.

Claim 1 has been amended to more clearly describe that all the possible redundant higher-order channel symbol values are examined for a combined signal of the plurality of subchannels and the channel symbol value producing the lowest power variation for the combined signal is chosen, support for which can be found in the specification on page 10 lines 4-15.

It should be noted that the "information" symbols and "channel" symbols of applicant's invention are different (see page 9 lines 6-12). This distinction is important in that forward error correction (FEC) is applied to the channel symbols and not the information symbols as is done in the prior art. Specifically, the information symbols are

first coded into channel symbols, and then the channel symbols are operated on by applicant's invention. Two operations are performed thereon.

First, since the channel symbols are of a higher order they will be closer together in their constellation, and therefore more susceptible to noise and interference. Therefore, applicant applies FEC to improve channel symbol resolution. This is different from the prior art where FEC is applied to the base-band information symbols to help recover lost symbols. Therefore, applicant's FEC is used on different symbols, in a different way, for a different results than in the prior art.

Kotzin, although an improvement in the art does not operate on higher order channel symbols, and therefore does not recognize the problem nor solution provided by applicant's invention. The Examiner implies that Kotzin uses FEC on the base-band information symbols. Even if this were so, this is different from using FEC on higher-ordered channel symbols to improve resolution. Kotzin would have no reason to apply FEC to improve symbol resolution unless Kotzin realized the problem about encoding to higher-order symbols. Since higher-order encoding is not performed Kotzin could not envision applicant's solution.

Second, the redundant symbols provided by the higher-order channel symbol encoding are used to allow applicant to search the redundant symbols for those producing the lowest power variation across the subchannels. Although the Examiner notes that bits are added to an information symbol during FEC, this is not the same as converting information symbols to a higher order channel symbols to provide many redundant symbols to choose from. As shown in applicant's Figure 9, two information symbols can be encoded to eight higher order redundant channel symbols. Applicant respectfully submits that this is completely different than adding bits to an information symbol during FEC, and adding bits to a symbol does not correspond to redundant higher-order symbols, since adding bits to a symbol only results in a longer symbol, not more symbols.

Moreover, the applicant respectfully submits that that Kotzin does not disclose the above distinctive features of amended claims 1 and 13. Kotzin discloses a system wherein a peak-to-average power ratio may be reduced for channels of information symbols by selecting between different coding techniques (abstract) until lowest power variation is achieved. In particular, Kotzin describes that a coder (401 of FIG. 4) receives a plurality of signals which are then encoded using a coding scheme (ref. e.g.col. 6 lines 1 to 6). This is different from applicant's invention in that only one coding technique is used to produce redundant channel symbols, and then the different available channel symbols are searched to find those that provide lowest power variation. Although, Kotzin seeks to solve the same power problem, it is done in a completely different way from

applicant's invention. Indeed, applicant's solution is probably simpler and faster since it is not necessary to expend computing power evaluating multiple coding techniques, and instead a simple addition is done across channel symbols of the subchannels (as described in applicant's Figure 7).

Further, claims 1 and 13 are concern with higher-order channel symbols after the information symbols are coded. Thus, these claims specifically relate to elements not described in Kotzin. That is, claims 1 and 13 operate on higher-order channel symbols with forward error correction and selecting from the redundant channel symbols provided by the higher-order coding to reduce power variation. This is in direct contrast to Kotzin wherein standard information symbol encoding is performed and wherein the peak-to-average power ratio can only be reduced by changing to a different information symbol encoding scheme. Clearly, Kotzin could not envision the selection from redundant symbols without providing redundant symbols through a higher-order conversion, and without the higher-order conversion Kotzin could not envision performing FEC on the higher-order symbols to mitigate denser constellation problems. Rather, Kotzin explicitly describes a system which is inherently based on a two-stage process and a separation between the encoding of the data (by the coder 401) and the peak-to-average evaluation (by the analyzer processor 406). Indeed, it is noted that the peak-to-average evaluation cannot be performed until the coder 401 has generated an output signal by encoding received data.

Therefore, the applicant respectfully submits that Kotzin does not teach the elements of amended claims 1 and 13. Accordingly, the applicant respectfully submits that this rejection has been overcome and requests that claims 1 and 13 may now be passed to allowance.

Since claims 2-12 depend upon allowable claim 1, the applicant respectfully requests that claims 2-12 may now be passed to allowance.

Claims 5 and 10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kotzin et al. as applied to claim 1 above, and further in view of Marshall (US 5502744). This rejection is respectfully traversed.

Claims 5 and 10 are dependent upon amended claim 1, hereby incorporated by reference, and are therefore deemed allowable as well for the same reasons.

Claim 8 has been rejected under 35 U.S.C. §103(a) as being unpatentable over Kotzin et al. as applied to claim 6 above, and further in view of Krueger et al. (US 5982818). This rejection is respectfully traversed.

Claim 8 is dependent upon amended claim 1, hereby incorporated by reference, and are therefore deemed allowable as well for the same reasons.

Claims 11 and 12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Kotzin et al. as applied to claim 1 above, and further in view of Cimini, Jr. et al. (US 6556557). This rejection is respectfully traversed.

Claims 11 and 12 are dependent upon amended claim 1, hereby incorporated by reference, and are therefore deemed allowable as well for the same reasons.

The other references of record have been reviewed and applicant's invention is deemed patentably distinct and nonobvious over each taken alone or in combination.

For the foregoing reasons, applicants respectfully request that the above rejections be withdrawn.

Inasmuch as this amendment distinguishes all of the applicants' claims over the prior art references, for the many reasons indicated above, passing of this case is now believed to be in order. A Notice of Allowance is earnestly solicited.


No amendment made was related to the statutory requirements of patentability unless expressly stated herein. No amendment made was for the purpose of narrowing the scope of any claim, unless applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

Authorization is hereby given to charge any fees necessitated by actions taken herein to Deposit Account 50-2117.

Respectfully submitted,  
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